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Buchanan Ingersoll
Burns Doane Swecker & Mathis
P O Box 1404
Alexandria, VA 22313-1404

EXAMINER	
SHEVIN, MARK L	

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1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.**	**Applicant(s)**	
	10/564,477	HEIMALA ET AL.	
	Examiner	**Art Unit**	
	Mark L. Shevin	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06/24/2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 14-30, filed June 24th, 2008, are currently under examination. Compared to the claims filed January 13th, 2006 and examined in the previous Office Action mailed March 27th, 2008:

Amended: None

Cancelled: Claims 1-13 are cancelled

Withdrawn: None

New: Claims 14-30

Status of Previous Objections

2. The objection to the drawings in the Office Action mailed March 27th, 2008 have been withdrawn in view of the new drawings filed June 24th, 2008.

Status of Previous Rejections

3. The previous rejections of claims 1-3 and 7-9 under 35 U.S.C. 103(a) over **Baczek** (US 4,256,553) in the Office action dated March 27th, 2008 have been withdrawn in view of the cancellation of these claims.

4. The previous rejection of claim 4 under 35 U.S.C. 103(a) over **Baczek** (US 4,256,553) in view of **Richmond** (US 6,537,440) in the Office action dated March 27th, 2008 have been withdrawn in view of the cancellation of these claims.

5. The previous rejections of claims 5 and 6 under 35 U.S.C. 103(a) over **Baczek** (US 4,256,553) in view of **Johnson** (US 3,957,602) in the Office Action dated March 27th ,2008 have been withdrawn in view of the cancellation of these claims.

6. The previous rejections of claims 10-12 under 35 U.S.C. 103(a) over **Baczek** (US 4,256,553) in view of **Heimala** (US 5,108,495) in the Office Action dated March 27th , 2008 have been withdrawn in view of the cancellation of these claims.

7. The previous rejections of claims 10-12 under 35 U.S.C. 103(a) over **Baczek** (US 4,256,553) in view of **Gabb** (US 5,616,168) in the Office Action dated March 27th , 2008 have been withdrawn in view of the cancellation of these claims

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Objections

8. **Claims 14-30** are objected to because of the following informalities: Claim 14 states that the first concentrate and leaching product solution go through at least two conversion steps to form a converted solution however only one step is then recited. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. **Claims 14-30** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants claim that the first concentrate contains "mainly" components that are "poorly soluble" in a leaching solution and that the second concentrate contains

components that are, on the other hand, contains "mainly" components are "well soluble*".*

The Examiner submits that well and poorly soluble are indefinite with regard to solubility. The terms well and poorly soluble in the claim are relative terms which render the claims indefinite. These terms are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is not clear what level of solubility constitutes of “well soluble” or “poorly soluble” Therefore, one would not know what the metes and bounds of the claims are.

Furthermore, “mainly”, as defined by the *Oxford English Dictionary* “for the most part; in the main; as the chief thing, chiefly, principally.”, does not clearly establish the composition of the concentrates to any discernable degree.

Claim Rejections - 35 USC § 103

10. **Claims 14, 17-19, and 23-25,** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Baczek** (US 4,256,553).

Regarding claim 14, Baczek is drawn to a process and system for recovering copper from chalcopyrite concentrate (Abstract).

Chalcopyrite ($CuFeS_2$) is the primary copper-bearing mineral mined, however this ore is extremely difficult to recover copper from by normal solution methods. Successful leaching methods also leach iron from chalcopyrite into solution, which then interferes in later processing steps such as electrolysis. For these reasons, dissolved copper and

dissolved iron must be separated (col. 1, lines 20-35). The Examiner construes the process steps of instant claim 14 as follows:

> A: Concentrating a copper sulfide-containing ore to form a first concentrate (poorly soluble) and a second concentrate (well soluble) separate from the first concentrate
>
> B: the second concentrate is leached in a leaching solution containing an acid, neutralized, and iron is precipitated from the solution to form a leaching product solution
>
> C: the first concentrate is converted in a series of at least two conversion steps
>
> D: the first conversion step reacts copper in the leaching product solution with sulfide-form iron in the first concentrate to form copper sulfide, removing copper sulfide, and returning a portion of the converted solution to the leaching of the second concentrate.

With respect to step A, Baczek teaches that ground chalcopyrite from grinding mill **11** is split into two streams and the first stream is directed to a leach circuit which yields a solution of copper sulfate (well soluble component) (col. 4, lines 36-43). This well soluble component is separated from the remaining poorly soluble components, which includes unreacted ground chalcopyrite (sulfide form iron) (col. 4, lines 44-45 and 58-66). Baczek discloses a separator **50** from which components **63** than can be regarded as “well soluble” are transported to a leaching step **24**, while components **52** that can be regarded as “poorly soluble” are transported to a conversion step.

With respect to step B, the well soluble components are subjected to leaching steps **16** and **24** to produce a solution containing dissolved copper as copper sulfate (col. 2, lines 35-42) which is directed to via line **28** to a liquid-solid separation device **30** which separates the well-soluble copper sulfate solution and recycles the well-soluble

copper sulfate solution to the first stage leaching reactor **16** to leach fresh chalcopyrite ore (col. 5, lines 24-30). The leaching is carried out using an acid-bearing solution and also contains precipitated iron in the form of ferric iron and ferrous sulphate (col. 6, lines 44-64)

With respect to step C, well-soluble copper sulfate solution generated in the leach circuit is directed via line **14** to the conversion circuit and reacted with chalcopyrite concentrate to form poorly soluble copper sulfide (col. 6, lines 11-30). This conversion step that receives well-soluble concentrate is located first in the flowing direction (downward arrows indicated in conversion circuit show flow direction). There are at least two conversion steps as Baczek teaches that there is a first stage conversion reactor **46** and a second stage conversion reactor **48** (col. 6, lines 30-45).

With respect to step D, Baczek does not explicitly teach that at least part of the solution obtained from the conversion step is returned to the leaching step, however:

It would have been obvious to one of ordinary skill in the copper hydrometallurgy arts, at the time the invention was made, to return at least a part of the solution obtained from the conversion step to the leaching step for several reasons. First the well-soluble copper sulfate solution from the leaching step is converted at **54** and at least a portion of this solution is fed to a second conversion unit **46** and on to separator **50** where at least a portion is feed back to the leach circuit using lines **63** and **66**. Furthermore, at least a part of the solution converted in conversion unit **54** eventually passes to either line **80** or **78** for recycling back to the leaching step. Thus Baczek implicitly suggests recycling at least a portion of the conversion effluent back to the leaching step.

Regarding claims 17 and 18, Baczek teaches that small amounts of trace metals such as zinc are present in the conversion circuit and are removed during conversion along with precipitated iron (col. 8, lines 40-51).

Regarding claim 19, Baczek teaches that the leaching step is conducted between 85-90 °C at ambient pressure (col. 5, lines 63-68), thus Baczek teaches atmospheric leaching. The temperature range of Baczek is within the instantly claimed temperature range of 50-105 °C.

Regarding claims 23, the different metal components are converted to sulfidic form by means of sulfide-form iron, in the form of chalcopyrite, fed into the conversion step (**44** fed into **46**).

Regarding claims 23-25, one of ordinary skill in copper hydrometallurgy would recognize troilite and pyrrhotite as Fe_xS_y ore that would be expected to react similarly to chalcopyrite during conversion as taught by Baczek because of copper's demonstrated affinity for sulfur over iron in the chalcopyrite conversion reaction taught by Baczek. One would be motivated to add troilite and/or pyrrhotite conversion steps in an attempt to extract precious metals contained in those materials.

11. **Claims 15 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Baczek** as applied to claims 14, 17-19, and 23-25 above, in further view of **Gabb** (US 5,616,168)

The disclosure of Baczek was discussed in the rejections of claims 14, 17-19, and 23-25 above, however Baczek does not teach that the precious metals contained in the concentrates are recovered at the conversion step.

Gabb

Gabb is drawn to the treatment of impurities streams during the smelting of copper concentrate and the converting of copper matte (col. 1, lines 14-17). In particular, his invention relates to a streamlined hydrometallurgical process that captures and returns for further processing many impurity stream components (col. 1, lines 22-25). Gabb teaches (col. 5, lines 5-10) that precious metals from his acid leach step are incorporated into the copper sulfide product produced during the copper precipitation (conversion) stage. Thus, these precious metals are recovered for treatment at this first conversion stage. Col. 5, lines 10-22 teaches that the copper is precipitated out as a sulfide while leaving behind all other metals. Lastly, Gabb teaches that the solid fraction from the acid leach step contains copper, precious metals, lead, and other metal values and the residue can be removed from the circuit for recovery and subsequent sale (col. 6, lines 62-67).

Regarding claim 15 and 30, it would have been obvious to one of ordinary skill in copper metallurgy, at the time the invention was made, taking the disclosures of Baczek and Gabb as a whole, to combine Baczek in view of Gabb to recovery precious metals at the first conversion step for the following reasons. Baczek teaches a recovery unit **40** for the recovery of precious metals such as gold and silver from the leach circuit (col. 5, lines 49-53) as well as stating at col. 8, lines 18-26, that the precious metals are present in the conversion circuit while Gabb suggests that precious metals could be removed at the copper precipitation stage (conversion to sulfide) for sale (col. 5, lines 5-22 and col. 6, lines 62-67).

12. **<u>Claim 16</u>** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Baczek** as applied to claims 14, 17-19, and 23-25 above, in further view of **Fisher** (US 3,827,557).

The disclosure of Baczek was discussed above, however it did not specifically teach the composition of the first and second concentrates after concentration.

<u>Fisher</u>

Fisher, drawn to flotation process for concentrating copper bearing ores including chalcopyrite while suppressing non-cuprous iron compounds (Abstract and col. 1, lines 5-10), teaches that iron sulfide is typically in copper sulfide bearing ores being concentration by flotation and is an undesirable element in the final ore concentrate as it is generally deleterious to the equipment employed in the reduction of copper and produces air pollution problems at the smelter (col. 2, lines 1-12). Consequently, it is desirable to selectively float the copper sulfides in the froth along with zinc, lead, and molybdenum sulfides while rejecting (separating out) iron sulfides to reduce smelter penalties, reduce smelter air pollution, and reduce freight costs (col. 2, lines 13-21).

In particular, Fisher teaches that it is desirable to selectively float copper iron sulfide material (chalcopyrite) and reject iron sulfide (pyrite) as it bears no copper (col. 2, lines 24-35).

<u>Regarding claim 16,</u> it would have been obvious to one of ordinary skill in the copper hydrometallurgy arts, at the time the invention was made, to modify the process of Baczek to form a first concentrate comprising chalcopyrite and a second concentrate containing pyrite as Fisher teaches that it is desirable to selectively float copper iron

sulfide material (chalcopyrite) and reject iron sulfide (pyrite) as it bears no copper (col. 2, lines 24-35) and that this process with reduce smelter penalties, reduce smelter air pollution, and reduce freight costs (col. 2, lines 13-21).

13. **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Baczek** as applied to claims 14, 17-19, and 23-25 above, in further view of **Richmond** (US 6,537,440).

The disclosure of Baczek was discussed in the rejections of claims 14, 17-19, and 23-25 above, however Baczek does not teach leaching being carried out in an autoclave.

Baczek teaches that autoclaves cause oxidation of at least some of the sulfur contained in the chalcopyrite to sulfate which must then be removed from the system (col. 2, lines 6-11).

Richmond

Richmond teaches that for extracting copper from a mineral feed containing copper sulphide mineral (abstract) and that highest leach recoveries are often obtained by having elevated ferric/ferrous rates at the end of the leach. This is difficult to attain in an atmospheric leach as the rate of oxygen dispersion in the pulp is limited (col. 2, lines 14-21). Richmond subsequently teaches that autoclave leaching should be carried out to address the deficiencies of the prior art processes (col. 2, lines 18-21 and Abstract, feature **20** in Figure. 1).

Richmond further teaches that there may be more than one leaching step including one or more subsequent leaching steps carried out under normal atmospheric conditions (col. 3, lines 24-29).

Regarding claim 20, it would have been obvious to one of ordinary skill in the copper hydrometallurgical arts, at the time the invention was made, to combine Baczek in view of Richmond to carry out leaching using an autoclave as Richmond suggests, beyond the complaints of Baczek at col. 2, that autoclave leaching allows higher leach recoveries than atmospheric leaching and thus one would be motivated by the expectation of higher copper yield in leaching.

14. **Claims 21 and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Baczek** as applied to claims 14, 17-19, and 23-25 above, in further view of **Johnson** (US 3,957,602).

The disclosure of Baczek was discussed in the rejections of claims 14, 17-19, and 23-25 above and while Baczek does teach conversion, he does not teach a temperature in the claimed range for conversion.

Johnson

Johnson teaches a process for hydrometallurgically recovering copper from chalcopyrite (copper sulfide material) which involves leaching and converting the chalcopyrite to form an insoluble copper sulfide (claim 9). The conversion reaction is conducted between about 150 and 250 °C (col. 2, lines 31-40). Johnson also teaches that in addition to chalcopyrite, the starting materials may contain sulfides of other metals (col. 2, lines 18-25). Although Baczek teaches that Johnson's process requires

"…the utilization of expensive autoclaving equipment…" and "generates significant amounts of excess free acids" (col. 3, lines 18-26), Johnson teaches that the reaction time is inversely proportional to temperature, the amount of time decreasing with increased temperatures (col. 2, lines 53-55).

Regarding claims 21 and 22, it would have been obvious to one of ordinary skill in copper hydrometallurgy, at the time the invention was made, taking the disclosures of Baczek and Johnson as a whole, to combine Baczek in view of Johnson to conduct the conversion step between 90-200 °C (and 150-190 °C) as Johnson teaches that conversion of chalcopyrite to digenite (Cu_9S_5) is preferably conducted between 150 and 250 °C, a range that overlaps the claimed temperature range and thus establishes a prima facie case of obviousness. MPEP 2144.05, para I states: "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists."

15. **Claims 26-29** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Baczek** as applied to claims 14, 17-19, and 23-25 above, in further view of **Heimala** (US 5,108,495).

The disclosure of Baczek was discussed in the rejections of claims 14, 17-19, and 23-25 above, however Baczek does not teach the control of flotation, leaching, or conversion by means of mineral-specific electrochemical measurements.

Heimala

Heimala teaches a method for controlling a process in which complex ores and/or concentrates are treated in order to achieve valuable components contained

therein where the process is controlled by oxidation/reduction reactions, flotation, leaching, and precipitation processes for different materials (col. 1, lines 5-12). The object of Heimala's invention is to control a process using active mineral electrodes and analyzing the state of the solid surface and/or the state between the solid material and the intermediate material and subsequently controlling these interfaces (col. 2, lines 21-30).

Heimala teaches in Example 4, (starting at col. 8) a specific embodiment using the process of his invention to separate copper minerals containing arsenic and antimony from essentially pure copper minerals such as chalcosite, covellite, chalcopyrite, etc. (col. 8, lines 34-40). Furthermore, the method can be applied to slags (col. 4, lines 6-10). Example 3 teaches recovering valuable components form a sulphide ore based on pyrrhotite were leaching was carried out in an autoclave (col. 7, lines 50-62).

Impedance analysis is used to control leaching and flotation processes and the information measured by impedance analysis means that the leaching velocity can be maximized for sulphur compounds and compounds such as pyrite (FeS_2) or NiS_2 can be passivated (col. 2, lines 45-68). Furthermore, the covering effect created by a given sulphur compound using a reagent such as sulphides can be chosen such that selective flotation, leaching, or precipitation is carried out, resulting in economic advantages (col. 3, lines 1-9).

It would have been obvious to one of ordinary skill in copper hydrometallurgy, at the time the invention was made, taking the disclosures of Baczek and Heimala as a

whole, to combine Baczek in view of Heimala to control flotation, leaching, and conversion based on mineral-specific electrochemical measurements, for the following reasons. Heimala teaches a method for controlling the electrochemical potential in an oxidation/reduction process for treating complex ore/concentrates using electrodes made of a material similar to the material similar to the material being treated (claim 1) where this process is used to control conversion (precipitation of sulfide which is part of precipitation - claim 10), leaching (claim 11), and flotation (claim 9). Heimala further teaches that his process can be applied to copper sulfide bearing materials (Examples 3 and 4). Motivation to combine Heimala with Baczek comes from the benefits taught in Heimala of increased process efficiency and economic advantages (col. 2, line 45 to col. 3, line 10).

Regarding claim 26, claim 9 of Heimala discloses controlling flotation through impedance analysis and thus when combined with the disclosure of claim 1, discloses controlling a flotation process controlled by means of mineral specific (electrodes of similar materials - claim 1) electrodes that takes electrochemical measurements (claim 1 and impedance at claim 9).

Regarding claim 27, claim 11 of Heimala discloses controlling flotation through impedance analysis and thus when combined with the disclosure of claim 1, discloses controlling a leaching process controlled by means of mineral specific (electrodes of similar materials - claim 1) electrodes that takes electrochemical measurements (claim 1 and impedance at claim 11).

Regarding claim 28 and 29, claims 8 and 10 of Heimala disclose controlling flocculation and precipitation through impedance analysis and thus when combined with the disclosure of claim 1, disclose controlling a conversion process (conversion involves flocculation and precipitation) controlled by means of mineral specific (electrodes of similar materials - claim 1) electrodes that takes electrochemical measurements (claim 1 and impedance at claim 8 and 10).

Response to Applicant's Arguments:

16. Applicant's arguments filed June 24th, 2008 have been fully considered but they are not persuasive.

Applicants assert (p. 11, para 3) that nowhere does Baczek teach a concentrating step.

In response, Baczek discloses a separator **50** from which components **63** than can be regarded as "well soluble" are transported to a leaching step **24**, while components **52** that can be regarded as "poorly soluble" are transported to a conversion step.

Applicants assert (p. 12, para 2) that Baczek does not disclose a second conversion step as specified by claim 17.

In response, there are at least two conversion steps as Baczek teaches that there is a first stage conversion reactor **46** and a second stage conversion reactor **48** (col. 6, lines 30-45).

Applicants assert (p. 12, para 3) that Baczek fails to disclose neutralization and iron precipitation in the leaching step as recited in claim 14.

In response, the leaching is carried out using an acid-bearing solution and also contains precipitated iron in the form of ferric iron and ferrous sulphate (col. 6, lines 44-64)

Applicants assert that characterizing the leaching process of Baczek as corresponding to the leaching of a well-soluble component in Applicant's second concentrate is incorrect at the leach circuit of Baczek is directed to leaching of chalcopyrite and require conditions that are more severe that would be necessary for the leaching of a well soluble component.

In response, the Examiner notes that there is no definition of well-soluble defined in the Instant Specification for has Applicant demonstrated any evidence that one of ordinary skill in the art would have recognized Baczek as not involving a well-soluble component.

Applicants assert (p. 13, para 2) that the first conversion circuit disclosed in Baczek does not correspond to the first conversion recited in claim 14 as Baczek require sulfur dioxide.

In response, the Examiner notes the referenced section of the Instant Specification relating to the use of SO_2 , however, the instant claims do not preclude its use.

Applicants assert (p. 13, para 3) that Baczek fails to disclose removing copper sulfide from a first conversion as recited in independent claim 14 as any copper sulfide are sent to the leach circuit or passed to second conversion.

In response, the use of "removing copper sulfide" includes passing the copper sulfide to another processing station as the copper sulfide is removed from the first conversion step.

Applicants assert (p. 14, para 1) that Baczek fails to disclose first passing a stream through the leaching step, and then returning the resulting stream through the first conversion step, and then returning the resulting converted stream from the first conversion step to the leaching step.

In response, as stated in the Office Action, it would have been obvious to one of ordinary skill in the copper hydrometallurgy arts, at the time the invention was made, to return at least a part of the solution obtained from the conversion step to the leaching step for several reasons. First the well-soluble copper sulfate solution from the leaching step is converted at **54** and at least a portion of this solution is fed to a second conversion unit **46** and on to separator **50** where at least a portion is feed back to the leach circuit using lines **63** and **66**. Furthermore, at least a part of the solution converted in conversion unit **54** eventually passes to either line **80** or **78** for recycling back to the leaching step. Thus Baczek implicitly suggests recycling at least a portion of the conversion effluent back to the leaching step.

Applicants assert (p. 14, para 2) that Baczek does not teach precipitating iron from the solution during leaching and prior to feeding it to a second conversion step.

In response, Baczek's leaching is carried out using an acid-bearing solution and also contains precipitated iron in the form of ferric iron and ferrous sulphate (col. 6, lines 44-64)

Applicants assert (p. 15, para 2) that Baczek does not describe a second conversion step where metals other than copper are converted into sulfide form by reaction with sulfide-form iron.

In response, as stated in the Office Action, Baczek teaches that small amounts of trace metals such as zinc are present in the conversion circuit and are removed during conversion along with precipitated iron (col. 8, lines 40-51).

Applicants assert (p. 16, paras 1-3) that Baczek and Richmond do not teach the use of autoclaves as Baczek teaches away from their use.

In response, the disclosure of Baczek and Richmond must be balanced with respect to teaching and the expectation of benefits. Richmond teaches that for extracting copper from a mineral feed containing copper sulphide mineral (abstract) and that highest leach recoveries are often obtained by having elevated ferric/ferrous rates at the end of the leach. This is difficult to attain in an atmospheric leach as the rate of oxygen dispersion in the pulp is limited (col. 2, lines 14-21). Richmond subsequently teaches that autoclave leaching should be carried out to address the deficiencies of the prior art processes (col. 2, lines 18-21 and Abstract, feature **20** in Figure. 1). Richmond taught that as a result there is a need for a process such as his which is suitable for treatment of a range of copper ores.

Applicants' further assertions (p. 16, para 5 – p. 17, para 3) further argue that the secondary references do not cure the deficiencies of using Baczek as the primary reference yet these asserted deficiencies have already been addressed above.

Lastly, Applicants assert (p. 18) that Gabb does not teach the subject matter of claim 30 as Gabb is only directed to a conversion step using sulfur or sulfur dioxide, not with sulfide-form iron as instantly claimed.

In response, the rejections for claim 14 already having been described and argued above, Gabb still suggests that precious metals could be removed at the copper precipitation stage (conversion to sulfide) for sale (col. 5, lines 5-22 and col. 6, lines 62-67) as discussed in the rejections above.

Pertinent Prior Art

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Hultholm: US 2008/0152558 A1

Marsden: US 7,341,700

Dreisinger: US 2008/0050293 A1

Heimala: WO 2005/007901 A1

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

-- Claims 14-30 are finally rejected
-- No claims are allowed

The rejections above rely on the references for all the teachings expressed in the texts of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the texts of the references. To emphasize certain aspects of the prior art, only specific portions of the texts have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

All recited limitations in the instant claims have been met by the rejections as set forth above. Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588 and fax number is (571) 270-4588. The examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy M. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Mark L. Shevin/
Examiner, Art Unit 1793

/Roy King/
Supervisory Patent Examiner, Art Unit 1793

September 15th, 2008
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